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SOME OBSERVATIONS ON THE PRE AND POST -- NATAL DEVELOPMENT OF HAIRS AND MILK TEETH OF TOMB BAT TAPHOZOUS NUDIVENTRIS

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INTRODUCTION

The tomb bat Taphozous nudiventris (Cretzschmar) is very common in the southern part of Iraq , especially in Basrah City . It is quite active and is found in large numbers from the beginning of April to the end of November (Al -- Robaae , 1970) .

The breeding in the colony takes place in June and July . An attempt was made to study the morphological development of the hairs and milk teeth in the pre -- natal and post -- natal life history .

Materials and Methods .

We collected the bats from a dilapidated house in the Old City of Basrah -- once every week -- in June and July 1972 .

The collection consisted of adult males , pregnant females and youngones . Soon after the collection , the specimens were killed and preserved.The foetus were dissected out of the pregnent females for the study of the external features . Since the live bats were difficult to keep under the captivity we had to confine our study on specimens collected from the colony at different times of the breeding season . The length of the fore -- arm is used as an index of the age . We have compared the largest foetus with the smallest

young (Table 1) . Observations were made under a dissecting binocular microscope (20 x) .

The growth and distribution of hairs and the development of the teeth at pre — and post -- natal periods are described in three different stages based on the fore -- arm length .

Distribution of Hairs .

Stage I . (Embryo)

Material : 1 specimen ; fore -- arm length 38 mm .

The whole head is crossed with hairs , a few of the frontal region were vibriassae -- like while those of the lower part of the head were longer than those of the upper part .

The back of the body , including the complete tail was covered with dense hairs . The chest and the abdomen were nearly covered among which a few were longer ones .

The fore — limbs had hairs on the dorsal part near the first claw . The hind limbs were covered all over with dense hairs .

Stage II . (New -- born)

Material . 1 specimen ; 41 mm length .

This stage is similar to the preceding one except that the abdomen and genitalia have fewer hairs .

Stage III . (Young)

Material : 1 specimen : fore -- arm length 44 mm .

No additional growth of hairs in any parts other than the regions mentioned above . The hairs were getting longer in growth . Abdomen was completely free from hairs although genitalia had a few of them ,

R e m a r k s ,

Although to the unaided eye the body was practically naked , the distribution of hairs was quite clear under the dissecting binocular microscope (20 x) .

Development of Teeth .

Stage I , (Embryo) ,

Material : 1 specimen ; fore -- arm length 38 mm .

Upper Jaw ,

Although the gum was not errupted , two pairs of incisors , one pair of canine , one pair of premolar , and two pairs of molars were externally noticeable as swellings on the gum , The canines were the most prominent . next came the incisors and premolars . The molars were least conspicuous .

Lower Jaw ,

The situation is the same as in the case of the upper jaw

except that the swellings were less conspicuous , however , the premolars were of the same size as that of the upper jaw .

Stage II , (New -- born)

Material : 1 specimen ; fore -- arm length 41 . 6 mm .

Upper Jaw .

The gum was erupted . Two pairs of well developed incisors were out and these were conspicuously curved inward towards the tip . The canines were equally developed . The three heads of tricuspid premolars were also out , each cusp was pointed and the first cusp was smaller than the third . Of the tricuspid molars , only the first head of the first molar was out .

Lower Jaw .

The gum was erupted . Incisors and canines were out . Of the three heads of the tricuspid premolars , only the first one was erupted . Of the two pairs of molars . only the first cusp of first molar was exposed . In general the teeth of the lower Jaw were less developed that the upper one .

Stage III . (Young)

Material : 1 specimen ; fore -- arm length 44 mm .

Upper Jaw ,

The incisors . canines and the tricuspid premolars were all bigger than the other two , All the three heads of first molar were expassed , while the second molar was still buried in the gum . while the the second molar was still behind in the gum .

Lower Jaw ,

The incisors and the canines were poorly developed compared with the upper jaw . The incisors had no inward bend like that of the upper jaw . Three heads of premolars were out . Molars were still not erupted .

The sequence of the milk teeth as per the size of the develop-- ment was . -- Canines -- Premolars -- Molars -- Incisors .

The dental formula : -- $I\frac{2}{2}$, $C\frac{1}{1}$, $P\frac{1}{1}$, $M\frac{2}{2}$.

D i s c u s s i o n : --

Poole (1938) observed fine hairs covering the body of the foetus of Pipistrellus subflavus : Ramakrishna (1950) marked dark hairs on the fore -- head and other parts of the body of Cymopteruos sphinx . Orr (1954) studied Antrozuos pallidus and marked the growth of hairs on the either side of the head , flight membranes and toes . Tamsitt and Valdivieso (1966) recorded

long dense hairs on the dorsum and the dorsal part of the head of the new born Stenoderma rufum . Jones (1967) found few hairs on the feet , shoulders , top of the head and some vibrissae on the lips . The present study on the distribution of hairs in the foetus and the new born of T . nudiventris reveals the presence of hairs on the head , shoulder , chest , abdomen , bach of the body , fore -- arm , hind -- limbs and tail .

Miller (1970) , Barette -- Hamilton (1910 -- 1911) , and Jones (1967) studied the development of teeth at the pre -- and post -- natal periods of the bats . Miller stated that the milk denfine of bat is highly specialized and helps young in clinging to the moreth Orr found that in full term foetus , the upper and lower canines are first to erupt, and are followed by the incisors and pre -- molars, and molars do not appear until the third to fifth day . Generally they are tricuspid . Jones noticed that all the teeth have erupted at birth in Nylticeius humeralis , and milk dental formula is

$$I \frac{2}{3}, C \frac{1}{1}, P \frac{2}{2}, = 22$$ in contrast to permanenet dental

formula : $$I \frac{1}{3}, C \frac{3}{1}, P \frac{1}{1}, M \frac{3}{3} = 28.$$

The sequence is as follows : canine -- incisors -- premolars -- molar . The present observations on the dentation of T: nudiventris reveals that the canines are the first to be appeared and immeditarely followed by the premolars . The incisors appear faster than molars. These teeth developed to the extent of enabling the blind new born

TABLE No. 2

The Measurments of the Three different stages of Taphozous nudiventris magnus

	EMBRYO F.A. = 38 mm.	YOUNG	
		F.A. = 41.6 mm.	F.A. = 44 mm.
T.L.	69	70	81
H.	24	26	26
F.A.	38	41.6	44
H.F.	18	17	18
E.	9	10	10.5
T.	8.5	10.5	11

to tightly at ached itself to the moiher (also aided by thumbs and hind feet) . This observations in confirmity with that of Miller (1970) .

The milk dental formu'a of T . nudiventris is : --

$$I\ \frac{2}{2},\ C\ \frac{1}{1},\ P\ \frac{2}{?},\ M\ \frac{3}{3} = 32$$, which is equal to the permanent condition .

SUMMARY

The distribution of hairs and development of milk teeth have been studied in three age groups (prenatal and postnatal of the Tomb Bat Taphozous nudiventris and are described .

The work has shown that the hairs present in the embryo on the abdomen as disappearing later birth .

الخلاصة

هذا البحث يتناول دراسة مورفولوجية مقارنة لتوزيع الشعر ونمو الاسنان في المرحلة الجنينية ومرحـلة المواليد الحديثة والمتأخرة للوطواط تافاسويس الكثير الانتشار في منطقة البصرة • وقد ظهر أن الشعر في الأجنة ينمو في منطقة البطن ثم يختفي في ادوار ما بعد الولادة المتأخرة كذلك بالنسبة للأسنان فأنهاء تبرز بعد الولادة مباشرة بخلاف كثير من الوطاويط التي تبرز بعض أسنانها قبل الولادة •

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